

Phytogeography of South Africa.—The very diverse vegetational types of South Africa have been classified and mapped by EVANS⁶ in such a manner as to give a good idea of the ecological divisions of the southern part of that continent. The woodland has been subdivided into forest, scrub, bushveld, and palmveld. The first of these, which is mostly evergreen, is dominated by species of *Podocarpus*, while the scrub is a type of Sclerophyllous Shrub, in which the Proteaceae, Ericaceae, and Restionaceae contribute the dominant forms. From this the bushveld differs in its deciduous character and also in its more parklike aspect and its floristic composition. Bushveld is widely distributed, and while dominated by *Acacia* spp., such genera as *Tamarix*, *Combretum*, *Ficus*, *Zizyphus*, and *Rhus* are of common occurrence. The palm belt comprises a littoral strip on the southeast in which such palms as *Mimusops caffra*, *Phoenix reclinata*, *Raphia vinifera*, and *Cocos nucifera* mingle with succulents from the genera *Aloe* and *Euphorbia*.

The grassland covers the greater portion of the country with transitions to scrub and desert. That of the Kalahari region occupies much of the central portion of South Africa with an open formation, short, low, wiry grasses, species of *Aristida* and *Eragrostis*, occurring in isolated tufts. This and the other grasslands show transitions to the desert toward the west.

Four distinct desert types are briefly characterized and mapped, perhaps the most remarkable being the southern portion, a vast shallow basin, the Karroo, sparsely populated by succulent, tuberous, and bulbous plants. Prominent genera are *Crassula*, *Mesembryanthemum*, *Cotyledon*, *Euphorbia*, *Aloe*, *Stapelia*, *Senecio*, *Encephalartos*, and *Euclea*.

More important perhaps than the text, at least for the American botanist, are the excellent plates, enabling one to visualize the different types, and the map showing their distribution.—GEO. D. FULLER.

Pigment production in *Penicillium*.—BRENNER,⁷ investigating the production of pigment in cultures of *Penicillium*, finds that in the absence of magnesium in the culture medium, or in the presence of ammonium salts whose utilization leads to an acid reaction of the culture fluid, no red, but only yellow pigment is produced. The red pigment is produced only in neutral media or in media developing an alkaline reaction. Iron apparently is not necessary for the formation of the red color. The author further reports a few preliminary experiments on the extraction and chemical reactions of the pigment which is insoluble in ether, chloroform, toluene, and similar organic solvents, but soluble in alcohol and dilute alkalies or ammonia. On account of the acid nature of the pigment the author attributes to it the physiological function of maintaining the neutrality of the medium.

⁶ EVANS, F. B. POLE, The plant geography of South Africa. Dept. Agric. Union of South Africa. Official Year Book. 1917. pp. 8. pls. 24. map. 1918.

⁷ BRENNER, W., Die Farbstoffbildung bei *Penicillium purpurogenum*. Svensk. Bot. Tidskr. 12:91-102. 1918.